Brit. J. vener. Dis. (1974) **50**, 360

Tonsillar gonorrhoea demonstrated by a suction device

ELLIS FROM AND NIELS K. VEIEN
Department of Dermatology, The Municipal Hospital, Copenhagen, Denmark

Gonorrhoea of the oral cavity has been demonstrated with increasing frequency in recent years among heterosexuals as well as homosexuals (Schmidt, Hjørting-Hansen, and Philipsen, 1961; Cowan, 1969; Bro-Jørgensen and Jensen, 1971; Hellgren, 1971; Owen and Hill, 1972; Ratnatunga, 1972; Rodin, Monteiro and Scrimgeour, 1972; Ödegaard and Gundersen, 1973; Wiesner, Tronca, Bonin, Pedersen, and Holmes, 1973). False negative results may occur when swabs taken from the surface of the tonsils are used, so that repeated tests may be required (Ödegaard and Gundersen, 1973).

The main purpose of the present investigation was to discover whether tonsillar gonorrhoea could be more frequently diagnosed when specimens were taken from the tonsillar surface and crypts by suction rather than by swabbing. We have also attempted to elucidate the mode of transmission and the clinical manifestations of tonsillar gonorrhoea, as well as to determine the most effective treatment.

Methods

In addition to physical examination, microscopical examination of smears from the urethra, and in women also from the cervix, were carried out in patients suspected of having venereal disease. The smears were stained with methylene blue and by Gram's method. In both sexes specimens for culture were obtained by swabbing the urethra, the anal canal, and the tonsils, and in women also the cervix. Charcoal impregnated, cotton-wool-tipped applicators were used for swabbing. The specimens were transported in Stuart's medium to the Neisseria Department of the Statens Seruminstitut. The identification of gonococci cultured from the genitalia and the anal canal was done by a direct immunofluorescent test; specimens from the oral cavity were identified bacteriologically. Penicillin sensitivity was estimated by the plate dilution method.

Specimens for identification of other *Neisseria* species were obtained from the tonsils of both sexes, from the urethra in men, and from the cervix in women.

During the patient's first visit to the clinic a blood specimen was taken for the gonococcal complement-fixation reaction (GR) and meningococcal complement-fixation reaction (MR). Culture of a specimen obtained by suction from the tonsils was done for all patients with gonococci in the genitalia or anal canal.

If the diagnosis was not made until the results of culture were available, we repeated the swabs immediately before obtaining the suction specimens in order to have comparable specimens.

For the suction procedure, a glass suction spoon (Figure) was placed over the tonsils. The spoon was connected to a suction pump, and by closing the hole in the shaft of the spoon the pressure was decreased to about 300 mm. Hg; suction was applied for 4 to 5 seconds. Specimens were obtained from both tonsils, but we did not separate the specimens. Most of the material stayed on the inside wall of the spoon, but occasionally a small amount was sucked into the pipette. A charcoal swab was used to remove the material from the spoon, and the specimens were transported to the Statens Seruminstitut in Stuart's medium like the other cultures.

Generally the patients tolerated the procedure very well; a few gagged, and an inadequate specimen was obtained in one case because of the patient's violent reaction. No local anaesthetics were used.

Received for publication January 1, 1974
Correspondence should be directed to: Niels K. Veien, M.D., Department of Dermatology, The Municipal Hospital, Ø. Farimagsgade 5, DK 1399 Copenhagen K, Denmark

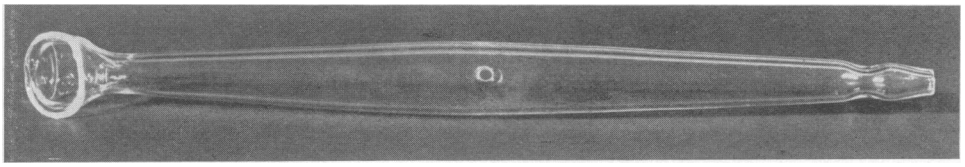

FIGURE. *Glass suction spoon*

The patients were questioned about symptoms, recent partners, and sexual habits, and in particular whether they had recently had oro-genital sexual relations. At the same time they were requested to abstain from sexual intercourse until they were discharged from the clinic.

The standard treatment of gonorrhoea consisted of 1 g. probenecid and 1·4 g. pivampicillin given orally under supervision, or 2 g. sulphamethoxazole and 0·4 g. trimethoprim given orally in the clinic, and the same dose 8 hrs later without supervision. When infection of internal organs was suspected, this treatment was given daily for 5 days. This prolonged treatment was also given if gonococci were demonstrated by culture after treatment. The results of treatment were assessed by culture of swab specimens from the urethra, the anal canal, and the tonsils, and also the cervix in women, and by culture of a suction specimen from the tonsils 1 week and 2 weeks after the last day of treatment. A patient was discharged when two consecutive post-treatment cultures were negative from all sites.

Patients

Among 468 patients who came to the clinicfrom January 1, 1973 to May 31, 1973, to be examined for venereal disease, 130 were found to have gonorrhoea. During the same period, thirteen patients were referred to us from an affiliated clinic after gonococci had been grown from tonsillar swabs. These thirteen patients were found among 851 examined for venereal disease, of whom 311 had gonorrhoea.

Results

Among our own patients, tonsillar gonorrhoea was found in fifteen of the 130 patients with gonorrhoea (12 per cent.). The tonsil was the only site involved in two of these. Thirteen cases of tonsillar gonorrhoea, or 4 per cent. of the 311 patients with gonorrhoea, were identified in the affiliated clinic, where the suction technique was not employed. Again, in two cases this was an isolated infection.

The age and sex distribution of the 143 patients is shown in Table I. Among our own patients tonsillar gonorrhoea was more than twice as frequent in women (17 per cent. compared with 7 per cent.).

In five of the fifteen patients with tonsillar gonorrhoea in the group that had suction specimens taken before treatment, the diagnosis was made solely on the basis of this specimen.

Table II records the information given by the 143 patients about their sexual behaviour. 65 women and 70 men were also questioned about oro-genital sexual relations. 47 women (72 per cent.) stated that they had performed fellatio; among these were sixteen of the eighteen who had tonsillar gonorrhoea. 46 men (66 per cent.) had performed cunnilingus or fellatio; among these were nine of the ten who had tonsillar gonorrhoea. All heterosexual and bisexual patients had also practised genital coitus. Four women with tonsillar gonorrhoea were bisexual, none homosexual. Two men with tonsillar gonorrhoea were homosexual, none bisexual.

TABLE I *Age of patients and number of cases of tonsillar gonorrhoea, by sex*

Sex	*Age (yrs)*	*Own clinic*		*Tonsillar gonorrhoea from affiliated clinic*
		Gonorrhoea	*Tonsillar gonorrhoea*	
Female	<16	2	1	0
	16–20	23	4	0
	21–25	16	3	5
	26–30	11	1	1
	>30	8	1	2
	Total	60	10	8
Male	16–20	6	1	1
	21–25	28	0	1
	26–30	19	2	2
	>30	17	2	1
	Total	70	5	5

TABLE II *Sexual behaviour*

Sex	*Total*	*Heterosexual*	*Bisexual*	*Homosexual*
Female	68	64	4	0
Male	75	65	2	8

Five women with tonsillar gonorrhoea complained of sore throat (Table III); three of these had signs of tonsillitis, associated with regional adenitis. Six men with tonsillar gonorrhoea complained of sore throat; two of these had signs of tonsillitis, associated with regional adenitis. One patient developed an acute arthritis; no further cases of complicated gonorrhoea were recorded.

TABLE III *Relation between gonococcal complement-fixation reaction (GR), site of infection, and symptoms of tonsillitis, by sex*

Sex	*GR*	*Genital and/or anal gonorrhoea*	*Additional tonsillar gonorrhoea*	*Symptoms of tonsillitis*
Female	0	50	13	1
	1	0	1	1
	2	0	0	0
	>2	0	4	3
	Total	50	18	5
Male	0	63	6	2
	1	2	0	0
	2	0	2	2
	>2	0	2	2
	Total	65	10	6

Four women had a GR titre of 2 or more; all of these had tonsillar gonorrhoea, and three had symptoms of tonsillitis. Four men had a GR titre $\geqslant 2$; all of these had symptomatic tonsillar gonorrhoea. It was found that a high GR was accompanied by a high MR; however, no meningococci or other *Neisseria* were identified in these patients.

Penicillin sensitivity studies were carried out on gonococcal strains from 132 patients, 27 of whom had tonsillar gonorrhoea. Six of 27 strains isolated from the tonsils of patients with tonsillar gonorrhoea had decreased penicillin sensitivity as compared with 22 of 105 from patients with genital or anal gonorrhoea. The relation between single-dose treatment of tonsillar gonorrhoea with probenecid and pivampicillin and the penicillin sensitivity of the gonococci is shown in Table IV.

TABLE IV *Relation between cure rate and penicillin sensitivity*

Sensitivity to pencillin	*Tonsillar gonorrhoea*	*Single-dose treatment with pivampicillin and probenecid*	*No. cured*
Resistant	6	3	1
Sensitive	21	13	6

The results of treatment of genital, anal, and tonsillar gonorrhoea are shown in Table V.

TABLE V *Results of treatment*

Treatment	*Genital and/or anal gonorrhoea*				*Tonsillar gonorrhoea*			
	1 day		*5 day*		*1 day*		*5 day*	
	P-P	*S-T*	*P-P*	*S-T*	*P-P*	*S-T*	*P-P*	*S-T*
Total cases	85	25	3	2	17	5	13	4
Number ineffective	0	0	0	0	9	2	0	0

P-P Probenecid and pivampicillin
S-T Sulphamethoxazole and trimethoprim

In no instance of recurrence of tonsillar gonorrhoea was a possibility of re-infection admitted. Two of the eleven treatment failures were diagnosed from the suction specimen only.

Discussion

In a group of patients with genital or anal gonorrhoea, we found tonsillar gonorrhoea in 12 per cent. when the diagnosis was made from specimens obtained by suction from the tonsils compared with 8 per cent. from swabs used in parallel. Tonsillar gonorrhoea was diagnosed in 4 per cent. of another group of patients with genital or anal gonorrhoea when the specimens for culture were obtained only by swabbing the tonsils.

The sex distribution is the same as that found by other investigators. Compared to figures reported by other investigators using swabbing techniques (Bro-Jørgensen and Jensen, 1971; Ödegaard and Gundersen, 1973), the incidence of tonsillar gonorrhoea found by the suction method is somewhat higher. The age distribution of patients with tonsillar gonorrhoea is about the same as that of patients with genital or anal gonorrhoea.

It is uncertain how tonsillar gonorrhoea is acquired. Practically all of the affected patients in the study had practised oro-genital sexual intercourse; a likely mode of infection is, therefore, direct transmission of gonococci from infected genitalia. In a few cases autoinoculation or transmission by kissing may have taken place.

In agreement with Owen and Hill (1972), Wiesner and others (1973), and Ödegaard and Gundersen (1973), we have found that tonsillar gonorrhoea is most often asymptomatic.

Metzger (1970), La Luna and Agus (1971), and Wiesner and others (1973) have found a frequent association between tonsillar gonorrhoea and disseminated gonorrhoea. We found one case of arthritis, but the fact that the GR was frequently positive at a fairly high titre seems to indicate that the gonococcal infection was not limited to the mucosa.

Therepautic failure after 1 g. probenecid and 2 g. ampicillin orally was reported by Bro-Jørgensen and Jensen (1971) and Ödegaard and Gundersen (1973), the latter in 47 per cent. of the patients treated. Therepeutic failure was also found after treatment with tetracycline 250 mg. four times a day for 8 to 9 days, repeated treatment being needed in several patients. However, Wiesner and others (1973) had no failure among nineteen patients treated for 5 days with 2g./day tetracycline in divided doses. Procaine penicillin, 4·8 m.u. intramuscularly, was effective in 35 of 36 cases, whereas seven of thirteen patients receiving 4 g. spectinomycin intramuscularly failed to respond.

We found that our standard treatment for gonorrhoea, 1 g. probenecid and 1·4 g. pivampicillin or two doses of 2 g. sulphamethoxazole and 0·4 g. trimethoprim, were each ineffective in approximately half of the patients.

The lack of response to treatment with pivampicillin did not correlate with decreased penicillin sensitivity. Daily treatment for 5 days with the usual 1-day treatment was effective.

Summary

Tonsillar gonorrhoea was found in fifteen (12 per cent.) of 130 patients with gonorrhoea, when material

for culture was obtained by a suction technique. Swabs taken in parallel revealed the organism in only ten of the fifteen cases.

Tonsillar gonorrhoea was diagnosed in thirteen (4 per cent.) of another group of 311 patients with genital or anal gonorrhoea when the specimens for culture were obtained by swabbing the tonsils.

Almost all patients with tonsillar gonorrhoea had had oro-genital sexual relations. In most instances the infection was asymptomatic. Three women and two men had signs of tonsillitis.

Among all the patients with gonorrhoea we found four women and four men with a gonococcal complement-fixation reaction $\geqslant 2$; all of these patients had tonsillar gonorrhoea.

Our standard treatment of gonorrhoea, 1 g. probenecid and 1·4 g. pivampicillin orally, or two doses at an 8-hr interval of 2 g. sulphamethoxazole and 0·4 g. trimethoprim, often failed. However, both methods of treatment were effective when administered daily for 5 days.

References

BRO-JØRGENSEN, A., and JENSEN, T. (1971) *Brit. med. J.*, **4,** 660

COWAN, L. (1969) *Brit. J. vener. Dis.*, **45,** 228

HELLGREN, L. (1971) *Svenska Läk. Tidn.*, **68,** 569

LA LUNA, F., and AGUS, B. (1971) *Ann. intern. Med.*, **75,** 649

METZGER, A. L. (1970) *Ibid.*, **73,** 267

ÖDEGAARD, K., and GUNDERSEN, T. (1973) *Brit. J. vener. Dis.*, **49,** 350

OWEN, R. L., and HILL, J. L. (1972) *J. Amer. med. Ass.*, **220,** 1315

RATNATUNGA, C. S. (1972) *Brit. J. vener. Dis.*, **48,** 184

RODIN, P., MONTEIRO, G. E., and SCRIMGEOUR, G. (1972) *Ibid.*, **48,** 182

SCHMIDT, H., HJØRTING-HANSEN, E., and PHILIPSEN, H. P. (1961) *Acta derm.-venereol. (Stockh.)*, **41,** 324

WIESNER, P. J., TRONCA, E., BONIN, P., PEDERSEN, A. H. B., and HOLMES, K. K. (1973) *New Eng. J. Med.*, **288,** 181

Gonococcie amygdalienne reconnue par un procédé d'aspiration

SOMMAIRE

Une gonococcie amygdalienne fut trouvée chez 15 (12 pour cent) de 130 malades gonococciques lorsque le matériel de culture fut obtenu par une technique d'aspiration. Les écouvillons utilisés parallèlement ne révélèrent l'organisme que chez 10 de ces 15 sujets.

La gonococcie amygdalienne fut diagnostiquée chez 13 (4 pour cent) d'un autre groupe de 311 malades atteints de gonococcie génitale ou anale lorsque les spécimens pour la culture furent obtenus en écouvillonnant les amygdales.

Presque tous les malades présentant une gonococcie amygdalienne avaient eu des relations sexuelles orogénitales. Dans la plupart des cas, l'infection était asymptomatique. Trois femmes et deux hommes avaient des signes d'angine.

Parmi tous les gonococciques, nous avons trouvé 4 femmes et 3 hommes présentant une réaction de fixation du complément gonococcique à $\geqslant 2$; tous ces malades avaient une angine gonococcique.

Notre traitement standard de la gonococcie—1 g de probénécide + 1,4 g de pivampicilline par voie buccale ou bien deux doses à huit heures d'intervalle de 2 g de sulfaméthoxazole + 0,4 g de triméthoprime—échoua souvent. Cependant, ces deux méthodes de traitement furent efficaces lorsque la cure fut poursuivie pendant 5 jours.